

PROGRAM MODIFICATION PROPOSAL

Background Information

Provide a detailed description of the proposed modification, including its nature and purpose and centrality to institutional mission. (1500 characters)

Chemistry majors are often interested in attending a professional program in the health sciences after obtaining their bachelor's degree. These programs include but are not limited to medical school, physical therapy school, dental school, veterinary school, and pharmacy school. Each of these professional schools has requirements for entry. The Health Sciences Emphasis is based on the core chemistry courses in the current chemistry degree. The Health Sciences Emphasis will still allow students to move into the workforce as chemists or attend graduate school in chemistry. It will however add to the flexibility of the current program through the addition of chemistry and science electives required for entry into the health sciences professional programs. This program allows for science classes outside the chemistry curriculum including classes such as anatomy, physiology, microbiology, and kinesiology to count as science electives in the major. These topics not only allow the students to meet the professional schools requirements, but they also prepare them for the entrance exams required for the health related professional programs.

List the objectives of the modified program. (1500 characters)

- Prepare the students for the requirements for entrance into the health science professional programs
- Retain the chemistry foundation through the chemistry core courses which is required for graduate work or careers in chemistry
- Allow flexibility in scheduling so students can take all required courses for their chosen health related field.
- Prepare the students for the entrance exams for the professional health related programs

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Assessment of Need

Provide an assessment of the need for the program modification for the institution, the state, the region, and beyond, if applicable. (1500 characters)

As the health-related professional schools and entrance exams to these programs have been modified, more flexibility and options in the chemistry major is needed. For example, the MCAT added a social science section so now our students need to take both psychology and sociology to prepare for the exam. Pharmacy programs are often now requiring not only additional science courses such as anatomy and physiology, but also courses such as speech and ethics. Currently, the students are being instructed to take the required courses through the advising process. This emphasis provides a more efficient strategy allowing the university to publish the requirements for the emphasis.

As stated in an Association of American Medical Colleges (AAMC) News press release there is an expected shortage of up to 120,000 physicians by 2030 and the demand for health care will be increasing due the aging population (https://news.aamc.org/press-releases/article/workforce_report_shortage_04112018/). Preparing students for careers in the health care fields will be vital. Preparation for the standardized entrance exams are important to the medical related fields. The average score for those applying to medical schools has increased from 501.8 to 504.7 and those actually attending medical school has increased from 508.7 to 510.4 in the last two years (<https://www.aamc.org/download/321494/data/factstablea16.pdf>). In light of this increasing competition for entry into health related professional programs, students need clear guidance on the most efficient curricular choices to prepare the knowledge and skills to be competitive.

As reported by the US Dept. of Labor – Bureau of Labor Statistics, (<https://www.bls.gov/ooh/healthcare/home.htm>) employment in the healthcare occupations is projected to grow 18 percent from 2016 to 2026, adding about 2.4 million new jobs. Healthcare occupations are projected to add more jobs than any of the other occupational groups. This projected growth is mainly due to an aging population, leading to greater demand for healthcare services. The median annual wage for healthcare practitioners and technical occupations (such as registered nurses, physicians and surgeons, and dental hygienists) was \$64,770 in May 2017, which was higher than the median annual wage for all occupations in the economy of \$37,690. Providing a specific Health Science Emphasis will prepare graduates to fill these expected openings in the healthcare occupations.

Will the proposed modification impact any existing programs and services at the institution?

Yes

No

If yes, explain. (1000 characters)

The expectation is that some current chemistry majors will choose this emphasis. This will cause them to take a different set of currently available elective courses to complete the emphasis.

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List of Similar Programs in South Carolina

Program Name	Institution	Similarities	Differences
B.S., Environmental Health Science	Benedict College	None	<p>The degree from Benedict College is not a B.S. in Chemistry whereas the Lander degree would be.</p> <p>The Benedict program doesn't require Organic Chemistry 1 and 2, which is required for the professional exams. This is a requirement for the Lander degree.</p> <p>The Benedict program doesn't require Biochemistry which is becoming increasingly more important for the entrance exams as well as becoming a requirement for some health professions programs. The Lander degree has this as an emphasis elective.</p>
B.S., Health Sciences (Pre-professional Health Studies Concentration)	Clemson University	<p>Both require the students to take the most of the basic courses tested on the professional entrance exams including Introductory Biology 1 and 2, Introductory Chemistry 1 and 2, Introductory Physics 1 and 2, and a social science.</p> <p>Both require Anatomy and Physiology which is required of some professional programs.</p>	<p>The degree from Clemson is not a B.S. in Chemistry whereas the Lander degree would be.</p> <p>The Clemson program doesn't require Organic Chemistry 1 and 2, which is required for the professional exams. This is a requirement for the Lander degree.</p> <p>The Clemson program doesn't require Biochemistry which is becoming increasingly more important for the entrance exams as well as becoming a requirement for some health professions programs. The Lander degree has this as an emphasis elective.</p>

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<p>B.S., Health Science</p>	<p>Furman University</p>	<p>Both programs require Anatomy and Physiology which is required of some professional programs.</p> <p>Furman's program requires Kinesiology and Lander's programs would have this as an elective course.</p> <p>Both programs require two science electives, which could then be used to take the core courses required for the professional programs.</p>	<p>The resulting degree from Furman is not a B.S. in Chemistry whereas the Lander degree would be.</p> <p>The Furman program doesn't require Introductory Biology 1 and 2, Introductory Chemistry 1 and 2, Introductory Physics 1 and 2, Organic Chemistry 1 and 2, Biochemistry and two social science (Sociology and Psychology). All of which are either requirements for Lander's degree except Biochemistry which is an elective in the degree.</p>
<p>B.A., Health Sciences</p>	<p>Furman University</p>	<p>Both programs require Anatomy and Physiology which is required of some professional programs.</p> <p>Both programs retain the chemistry foundation through the chemistry core courses which is required for graduate work or careers in chemistry.</p>	<p>The resulting degree from Furman is not a B.S. in Chemistry whereas the Lander degree would be.</p> <p>The Furman program doesn't require Introductory Biology 1 and 2, Introductory Chemistry 1 and 2, Introductory Physics 1 and 2, Organic Chemistry 1 and 2, Biochemistry and two social science (Sociology and Psychology). All of which are either requirements for Lander's degree except Biochemistry which is an elective in the degree.</p>
<p>B.S., Health Science</p>	<p>North Greenville University</p>	<p>Both Programs require an introductory biology course as well as two semesters of general chemistry.</p> <p>Both programs also require psychology.</p> <p>Both programs require Anatomy and Physiology which is required of some professional programs.</p>	<p>The resulting degree at North Greenville University is not a B.S. in Chemistry whereas the Lander degree would be.</p> <p>The North Greenville University Degree offers concentrations in Exercise Science, Gerontology, or Heath Promotion and Education.</p>

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			The Lander degree requires two semesters of Organic Chemistry, two semesters of Physics, and Sociology which are needed for preparation for professional schools.
B.S., Health Sciences	Bob Jones University	<p>Both programs have flexibility built into the programs for students interested in different professional fields.</p> <p>Both programs require Anatomy and Physiology which is required of some professional programs.</p> <p>Some program options at Bob Jones University include the basic core science courses required by the professional schools as well as the entrance exams; such as Introductory Biology 1 and 2, Introductory Chemistry 1 and 2, Introductory Physics 1 and Organic Chemistry 1. These are all requirements of the Lander Chemistry degree.</p>	<p>The resulting degree Bob Jones University is not a B.S. in Chemistry whereas the Lander degree is.</p> <p>The programs at Bob Jones University do not require Organic Chemistry 2, Physics 2, Biochemistry, or two social science courses required in the Lander emphasis.</p> <p>A number of options in the Bob Jones University program are not science degrees but are public health care administration programs.</p>
B.S., Health Science	Morris College	Both programs require Anatomy and Physiology which is required of some professional programs.	<p>The resulting degree from Morris College is not a B.S. in Chemistry whereas the Lander degree is.</p> <p>The Morris College program doesn't require Introductory Biology 1 and 2, Introductory Chemistry 1 and 2, Introductory Physics 1 and 2, Organic Chemistry 1 and 2, Biochemistry and two social science (Sociology and Psychology) which are in the Lander degree.</p>
B.S., Health Science	South University	Both programs require Anatomy and Physiology and Microbiology which are required by some professional programs.	The resulting degree from South University is not a B.S. in Chemistry whereas the Lander degree is.

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The program at South University does not require Organic Chemistry 1 & 2 or Biochemistry required in the Lander emphasis.

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Description of the Program

PROJECTED NEW ENROLLMENT						
Year	Fall		Spring		Summer	
	Headcount	Credit Hours	Headcount	Credit Hours	Headcount	Credit Hours
2018-2019	0	0	4	60	0	0
2019-2020	6	90	6	90	0	0
2020-2021	8	120	8	120	0	0
2021-2022	8	120	8	120	0	0
2022-2023	8	120	8	120	0	0

Curriculum

2018 - 2019 PROGRAM REQUIREMENTS

Credit Hours

GENERAL EDUCATION REQUIREMENTS (For approved courses see the General Education section)

Core Academic Skills

ENGL 101	3
ENGL 102	3
MATH 121 or 123	3
Foreign Language	3
LINK 101	1
FALS (must attend 15 total FALS events)	0

Humanities and Fine Arts

Elective	3
Elective	3

Behavioral and Social Perspectives

PSYC 101	3
SOCI 101	3

Scientific & Mathematical Reasoning

MATH 211	3
PHYS 201 or PHYS 211	4

General Education Electives

PHYS 202 or PHYS 212	4
Elective	3
Elective	3

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TOTAL GENERAL EDUCATION REQUIREMENTS 42

MAJOR PROGRAM CORE REQUIREMENTS

CHEM 111	4
CHEM 112	4
CHEM 198	1
CHEM 199	1
CHEM 221	4
CHEM 222	4
CHEM 299	1
CHEM 330	5
CHEM 331	4
CHEM 401	4
PSCI 499	3

MAJOR PROGRAM EMPHASIS REQUIREMENTS

BIOL 111	4
BIOL 112	4
BIOL 202	4
BIOL 203	4
Choose 3 of the following: (depends on program and school)	9-10
SPCH 101	
PHIL 302	
BIOL 204	
PSYC 203	
CHEM 301	
PEES 310	

TOTAL MAJOR EMPHASIS REQUIREMENTS 60-61

OTHER ELECTIVES 17-18

TOTAL FOR BS DEGREE 120

Coursework must include at least 30 hours earned in 300 or above level courses, of which 12 hours must be in the major.

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Curriculum Changes

Note: Complete this table only if there are changes to the curriculum.

Courses Eliminated from Program	Courses Added to Program
	BIOL 112- Principles of Biology II
	BIOL 202- Human Anatomy
	BIOL 203- Human Physiology
	Added emphasis electives to include the following <ul style="list-style-type: none"> • SPCH 101 - Speech Fundamentals • PHIL 302 - Ethics • BIOL 204 - Microbiology • PSYC 203 - Developmental Psychology • CHEM 301 - Biochemistry • PEES 310 - Kinesiology and Exercise Biomechanics These courses are often required for different professional programs. The courses are already currently offered at Lander.

Worth noting is the fact that current ~~Ss~~ students, pursuing health professional preparation, already take these courses, but often must attend summer school to fit the extra coursework into their schedules. BIOL 112, BIOL 202, and BIOL 203 are being moved from being science electives to being emphasis requirements. Classes such as SPCH 101, PHIL 302, PSYC 203, and PEES 310 are being moved from general electives to emphasis electives. BIOL 204 is being moved from a science elective to an emphasis elective. No new classes are being created for this emphasis. This is a formalization of coursework already being taken by students interested in health professions.

Faculty

Provide a brief explanation of any additional institutional changes in faculty and/or administrative assignment that may result from implementing the proposed program modification. (1000 characters)

This emphasis would require no additional faculty or administrative resources.

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Resources

Identify any new library/learning resources, new instructional equipment, and new facilities or modifications to existing facilities needed to support the modified program. (2000 characters)

The Larry A. Jackson Library at Lander University provides access to databases such as Academic Search Complete, Applied Science and Technology Full Text, and PubMed. These have already been supporting learning across campus and they will certainly provide support for this emphasis. In addition, Lander's library has recently purchased MCAT preparatory flashcards as well as Caplan review texts to support pre-medical preparation. We would expect the library to update the reference material for the entrance examinations for health related programs every two years.

Currently the Physical Sciences Department is providing a practice MCAT exam for chemistry majors preparing for entrance into medical school. We would require continued funding for a full-length practice exam for each student in their required program.

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Financial Support

Estimated New Costs by Year						
	1st	2nd	3rd	4th	5th	Total
Program Administration	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Faculty and Staff Salaries	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Travel Expenses	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Indirect Costs (Utilities, etc.)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Graduate Assistants	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Equipment	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Facilities	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Supplies and Materials ¹	\$ 150	\$ 200	\$ 200	\$ 200	\$ 250	\$ 1,000
Library Resources ²	\$ 150	\$ -	\$ 150	\$ -	\$ 150	\$ 450
Other	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Total	\$ 300	\$ 200	\$ 350	\$ 200	\$ 400	\$ 1,450
Sources of Financing						
Tuition Funding ³	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Program-Specific Fees	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
State Funding (Special State Appropriation)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Reallocation of Existing Funds	\$ 300	\$ 200	\$ 350	\$ 200	\$ 400	\$ 1,450
Federal Funding	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Other Funding	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Total	\$ 300	\$ 200	\$ 350	\$ 200	\$ 400	\$ 1,450
Net Total	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Ratio of Program Financing to Program Cost	1.00	1.00	1.00	1.00	1.00	1.00

¹ Full-length practice MCAT exams for each student in the program.

² Updated reference materials (MCAT preparatory flashcards and Caplan review texts)

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Budget Justification

Provide a brief explanation for the other new costs and any special sources of financing (state funding, reallocation of existing funds, federal funding, or other funding) identified in the Financial Support table. (1000 characters)

Note: Institutions need to complete this budget justification *only* if any other new costs, state funding, reallocation of existing funds, federal funding, or other funding are included in the Financial Support table.

The increased cost of the supplies and materials are for the practice exams for the students and will be covered by the Department of Physical Sciences budget.

The additional cost of the library material will be factored into the library budget. The library has already begun purchasing materials for the program.

Evaluation and Assessment

Will any the proposed modification impact the way the program is evaluated and assessed?

Yes

No

If yes, explain. (1000 characters)

Will the proposed modification affect or result in program-specific accreditation?

Yes

No

If yes, explain; if the modification will result in the program seeking program-specific accreditation, provide the institution's plans to seek accreditation, including the expected timeline for accreditation. (500 characters)

(Not applicable)

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Will the proposed modification affect or lead to licensure or certification?

Yes

No

If yes, explain how the program will prepare students for licensure or certification. (500 characters)

(Not applicable)

Teacher or School Professional Preparation Programs

Is the proposed modified program a teacher or school professional preparation program?

Yes

No

If yes, complete the following components.

Area of Certification

(Not applicable)

Attach a document addressing the South Carolina Department of Education Requirements and SPA or Other National Specialized and/or Professional Association Standards.